

# SYSTEM OPERATIONS



# ROLE OF SYSTEM OPERATIONS DURING TEM

By

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## PREAMBLE

- Following the Electricity Power sector Reform Act of May, 2005 System Operations (SO) and Market Operations (MO) were created under the Transmission Company of Nigeria (TCN), charged with the running of the Physical & Commercial transactions of Electricity Market respectively.
- The Nigerian Electricity Market, according to the Business Plan developed by BPI (consultant), was to go through three different stages: Pre-Transitional, Transitional and Medium Term.
- Nigerian Electricity Regulatory Commission (NERC), set six conditions precedent (CPs) for SO entry into the second stage of the market which is the Transitional Electricity Market (TEM). Prominent among which was CP-4, the establishment of TEM Desk.

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## **CP 4 - ESTABLISH TEM DESK FOR EFFECTIVE HOURLY MANAGEMENT OF GENERATOR SCHEDULING, LOAD ALLOCATION, AND UFLS PROGRAM MONITORING INCLUDING REAL TIME ADJUSTMENT**

- SO has established a Transitional Electricity Market (TEM) Desk, for the purposes of conducting market transactions at the National Control Centre.
- The team on this Desk works in coordination with System Operation Desk, Operation Planning team & other Market Participants. The Desk is fully operational for 24/7.

The routine functions of the Desk include among others the following:

- Energy data collation from Gencos/Transmission Area Control Centres (Instructed/Contractual off take)

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## TEM DESK continue.....

- Collation of Day Ahead declarations (nominations) from Power Plants
- Preparing Load Allocation revision from time to time as system demands
- Monitoring of Ancillary Service delivery (Spinning Reserve /Black Start)
- Sending Capacity and Energy data to MO and NBET at the end of the month for monthly billing and payment
- Monitoring of the Under Frequency Load Shedding Scheme (UFLS)
- Collation and confirmation of demand forecast from all Discos

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## TEM DECLARATION – NERC ORDER

TEM was declared on the 1<sup>st</sup> January, 2015 via its Order No.136 of 30th January, 2015 by the Regulator, implications of the declaration are :

- Activation of all contracts i.e Power Purchase Agreements (PPAs) between NBET and Gencos on the one hand and Vesting Contracts (VCs) between NBET and Discos on the other.
- 100% payment and/or full settlement of MO and NBET invoices.
- MO is to be settling all service charges which include NERC Regulatory charges, MO charges, SO charges, AS charges, TSP charges and NBET administration charges.
- Full implementation and application of market rules and grid code

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## SUPPLEMENTARY TEM ORDER

- This Order was issued to provide a framework for addressing the operational aspects of TEM in where some market participants don't have effective contracts in accordance with the various rules and codes.

Item 8(iii) of the Supplementary Order:

“On a monthly basis, a maximum of 300MW of energy from the NIPP plants shall be used to serve existing supply obligations to International customers at the price subsisting with those customers. The balance of energy from NIPP shall be sold to market through the vesting contracts at the prevailing prices. This arrangement shall terminate on or before 31<sup>st</sup> December, 2015.....”

## PHYSICAL MARKET TRANSACTIONS

SO initiates the physical transaction of the Market at the National Control Centre on daily basis by:

- Prediction of active (MW) power requirements of the grid based on system generation captured at 6.00hrs from power plants
- Production of a workable schedule to meet these requirements through the review of declarations of the power plants above, which is to provide an effective spinning reserve.
- Generation of grid load allocation based on NERC template as provided in MYTO 2.1 Order within the confines of the generation schedule after deducting load allocation for the International customers, CEB & NIGELEC.

## PHYSICAL MARKET TRANSACTIONS ...continues

➤ Instructing the generators to commit their units according to the schedule and then monitoring on continuous basis of the system to ensure compliance in load allocations by the Discos.

It should be noted however, that MYTO Load allocation formula assumes an ideal Electrical Power System, its application is inhibited by Nigerian Electricity Supply Industry (NESI) environment which is characterized by:

- Non robust and encumbered Transmission infrastructure
- Inadequate or low level of generation due to water/ gas shortages
- Inadequate spinning reserve
- Inadequate network compensation
- Poorly reticulated and encumbered distribution feeders





In order for SO to perform its obligation during TEM vis-a-vis the technical constraints, Operational Procedures (OPs) were fashioned out to mitigate the effects of these constraints. The OPs were written in terms of the current NESI environment:

- OP3 – Procedure for Scheduling
- OP13 – Procedure for Balancing
- OP14 – Procedure for Information
- OP15 – Procedure on Ancillary Services
- OP18 – Procedure on Capacity Verification
- OP19 – Procedure on Instructions

Technical constraints will continue to be addressed by the aforementioned OPs until the grid becomes robust enough to play its expected role in the market, going forward.

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## WAY FORWARD

- Predictable and sustainable generation is to be ensured by securing more gas to power with effective water management.
- Mechanized line tracing of encumbered critical 330/132 kV transmission lines to be fast tracked to minimize incidence of system collapse.
- Completion of existing transmission reliability projects (NIPP & TSP) to provide loops, redundancies and corridors for generation evacuation.
- Power Plants should be incentivized to deliver more spinning reserves for further grid stabilization.
- Discos to re-engineer the reticulation of 33kV feeders and free them from all encumbrances to minimize the incidence of load rejection.



## **CONCLUSION**

Considering the existing technical constraints and challenges of NESI that affect market performance, it is imperative that timely amelioration of deficiencies by stakeholders (National and International) is of the essence, for the Industry to go forward in the attainment of a Robust Electricity Market.

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**Thanks**